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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/811,979	03/30/2004	Satoshi Kamiyama	403018	3130
23548	7590	09/09/2005	EXAMINER	
LEYDIG VOIT & MAYER, LTD 700 THIRTEENTH ST. NW SUITE 300 WASHINGTON, DC 20005-3960			PHAM, LONG	
			ART UNIT	PAPER NUMBER
			2814	

DATE MAILED: 09/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

H.A

Office Action Summary	Application No.	Applicant(s)	
	10/811,979	KAMIYAMA ET AL.	
	Examiner	Art Unit	
	Long Pham	2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 1-4, 17 and 18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 5, 9, 19 and 20 is/are rejected.
- 7) ☒ Claim(s) 6-8 and 10-16 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 3 IDS.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of claims 5-16 and 19-20 in the reply filed on 06/30/2005 is acknowledged.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 5 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harada et al. (EP 1363333) in combination with Koyama et al. (US publication 2004/0169240).

With respect to claims 5 and 9, Harada et al. teach a method of manufacturing a semiconductor device comprising (see figs. 1-6, 7(a)-7(c), and 8(a)-8(c)) and associated text):

forming a base interface layer 11b on a substrate 10;

forming a metal silicate film 11a containing a metal in a peak concentration of 10 percent or greater (see col. 15, lines 5-10 and fig. 6) on said base interface layer;

forming a nitrogen-containing metal silicate film 11c having a peak nitrogen concentration on said metal silicate film; and

forming a gate electrode 12 on said nitrogen-containing metal silicate film.

Harada et al. fail to teach that the range for the peak concentration of nitrogen in the nitrogen-containing metal silicate film.

Koyama et al. teaches that having a nitrogen concentration of about 20 percent in a metal silicate layer to suppressing crystallization. See [0087].

It would have been obvious to one of ordinary skill in the art of making semiconductor devices to incorporate the teaching of Koyama et al. into the process of Harada et al. to attain the above advantage.

With respect to claim 9, Harada et al. fail to teach the claimed range of the concentration of metal in the nitrogen-containing metal silicate film.

However, it would have been obvious to one of ordinary skill in the art of making semiconductor devices to determine the workable or optimal value or range for the metal concentration in the nitrogen-containing metal silicate film through routine experimentation and optimization to obtain optimal or desired device performance because it has been held that it is not inventive to discover the optimum or workable ranges of a result-effective variable within given prior art conditions by routine experimentation. See MPEP 2144.05.

4. Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamaguchi (US publication 2005/0167768) in combination with Yamazaki et al. (US 2005/0110091).

Yamaguchi teaches a method of forming a high-dielectric-constant film on a substrate comprising (see claim 1):

supplying a first source gas that contains at least one element of elements constituting a high-dielectric-constant film into a housing or chamber where a substrate is placed;

supplying a second source gas into a housing or chamber, the second source gas reacting with said first source gas and forming the high-dielectric-constant film.

Yamaguchi fails to teach heating the high-dielectric-constant film with radiating light.

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Yamazaki et al. heating a dielectric film with radiating light to obtain densification of the film and high dielectric constant to improve withstand voltage.

It would have been obvious to one of ordinary skill in the art of making semiconductor devices to incorporate the teaching of Yamazaki et al. into the process of Yamaguchi to attain the above benefit.

Yamaguchi and Yamazaki et al. fail to teach the range for the time for heating.

However, it would have been obvious to one of ordinary skill in the art of making semiconductor devices to determine the workable or optimal value or range for the time for heating of the dielectric film through routine experimentation and optimization to obtain optimal or desired device performance because it has been held that it is not inventive to discover the optimum or workable ranges of a result-effective variable within given prior art conditions by routine experimentation. See MPEP 2144.05.

Allowable Subject Matter

5. Claims 6-8 and 10-16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Long Pham whose telephone number is 571-272-1714. The examiner can normally be reached on M-F, 7:30AM-3:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on 571-272-1705. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Long Pham
Primary Examiner
Art Unit 2814

LP